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Earth Observation Summit Activities - Integration and Exchange:

A Progress Report on Efforts to Improve Our Global Earth Observation

Capabilities

I'm here to talk about the progress we've made in improving our Global Earth Observation capabilities. There has been some progress in the last couple of years. We've gained the international support we need to move forward. Nationally we have an Administration that supports the development of a Spatial Data Infrastructure and through the collaborative efforts of the partnering countries and states we now have a plan to make geospatial global. I applaud Vice Admiral Conrad Lautenbacher, Administrator of NOAA for his leadership in this international effort to improve Earth observation. The process has also been led by the European Commission, Japan and South Africa, who represent the developing countries.

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Shortcomings of Current Earth Observation Efforts

There are a lot of challenges associated with collecting, managing, accessing and using environmental data and information that are still facing the geospatial community. Some of the shortcomings are:

- Lack of access to data
- Eroding technical infrastructure
- Spatial and temporal gaps in data sets
- Data interoperability
- Uncertainty about data continuity
- Inadequate user involvement

- Lack of relevant processing systems to transform data

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Global Earth Observation System of Systems (GEOSS)

In an attempt to address these challenges the international community has pulled together to develop the GEOSS. GEOSS will be a distributed system of systems, building step-by-step on current cooperation efforts among existing observing and processing systems within their mandates, while encouraging and accommodating new components.

Capabilities we are building as a global community are:

- Improve coordination of strategies and observation system
- Link all platforms: in situ, aircraft, and satellite networks
- Identify gaps in global capacity
- Facilitate exchange of data
- Provide adequate info to decision-makers

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Earth Observation Summits

GEOSS is actively supported by the ministers of sixty countries and more than forty participating regional and international organizations. This international political support can bring greater success. The U.S. was one of the driving forces to start this process. The first Earth observation summit was held in Washington D.C. in July of 2003. I was pleased that Interior Secretary Gail Norton attended the summit. In her address to the ministers she endorsed "...better access to and sharing of remotely sensed and other earth science data..." and pointed out "...free and open sharing of scientific data is a necessity for ensuring success in gathering knowledge of environmental conditions..." I've been pleased to represent the Department and USGS at all three summits and GEO meetings.

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GEOSS Development Process

The first summit established the ad hoc group on Earth observation to guide the development of the GEOSS 10-year implementation plan. A major priority for GEO was to involve developing countries, seek input from users and the scientific and technical community.

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Outcomes of EO Summit III

Last month, in Brussels the third summit endorsed the GEOSS 10-Year Implementation Plan and established the permanent Group on Earth Observations GEO, which will guide the implementation of the plan. A communiqué was adopted to support Tsunami and Multi-Hazard Warning Systems in the context of GEOSS.

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GEOSS: Enabling Sound Science for Decision-Making

Sound science is needed to make sound decisions. GEOSS helps us take the pulse of the planet so we can make those sound decisions.

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GEOSS Focus: Societal Benefits of Improved Earth Observation

To get the attention of the ministers, the GEOSS needed to address real-world problems early in the process. To start with, we have identified nine societal benefit areas. Here are a few examples:

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Reduce Losses from Natural and Human Induced Disasters

For example, if there had been a more effective Tsunami early-warning system in the Indian Ocean it could have reduced the loss of life and property.

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Terrestrial, Coastal, and Marine Ecosystems

- Includes strengthening of an ocean observation system for region
- Benefit is healthy coastal ecosystem

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Improve Human Health and Well-Being

- Cases of Malaria in the developing world
- West Nile Virus in the US

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Support Sustainable Agriculture

Drought prediction is as important in the US as it is in other parts of the world. GEOSS provides the information and data needed to forecast drought conditions, realizing worldwide economic benefits to agriculture.

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Combat Desertification and Drought

Not only is Asia particularly prone to desertification and drought, but in the US there are annual losses of \$6 -8 billion. GEOSS recommended a fully integrated in situ and satellite observations

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Improve Energy Resource Management – if we could forecast the likelihood and path of hurricanes farther in advance we could prepare more effectively saving lives and protecting valuable infrastructure in its path.

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The GEOSS architecture (schematic)

-describes how components fit together in a system of systems. We're not creating a big international database or a single new system. But rather, we are using the resources of all of the participating Nations and organizations to create a network of systems. This system of systems will better satisfy user needs than the individual components or system of which it is composed. The GEOSS architecture produces data and information that feeds Earth system models. These models are used to make predictions about environmental conditions. These predictions are key to providing leaders with the access to more timely, comprehensive, and accurate information. This information is what they need to make sound decisions.

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US Contribution to GEOSS: Strategic Plan for the US Integrated Earth

Observation System

In support of GEOSS, the U.S. contribution has taken shape in the form of a strategic plan for the U.S. Integrated Earth Observation System (IEOS). The vision is to enable a healthy public, economy, and planet through an integrated, comprehensive and sustained Earth observation system. This plan identifies the U.S. observing capabilities that will be

part of the international plan. It builds on existing observing capabilities, and highlights the need to fill gaps where they exist. It uses common standards and is designed to be compatible with the international architecture.

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Strong National Support

Just as the international plan is based on a strong foundation of support, the U.S. effort has an equally firm level of support from 15 federal agencies and the Office of the White House.

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Near-term Opportunities

These are the highest priority near-term opportunities that are being addressed in the implementation of the U.S. Plan. USGS is currently focused on two of these priorities:

- Improved observations for Disaster Warning –

For example, in reaction to the recent tsunami disaster, the USGS earthquake center provided early information on the cause, timing and extent of the tsunami. Satellite data were used by relief agencies to show the before and after effects of flooding and to identify regions most affected. To identify conditions before the disaster, we used Landsat data acquired in 2001, data in the archive that had not been sold often, though of proven value when needed.

- Global Land Observing System –

Underlying research is the 30-year record of Landsat earth observations. Those data are key to research. I am pleased to report the President has supported further funding of Landsat and follow on missions in the Fiscal Year 06 budget.

Additionally, we will we plan to convert the nation's vast and dispersed aerial photography collection into a more accessible electronic format in support of research. We also will also continue to help define the sensing capabilities needed in the future.

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Role for Geospatial Data Community

There is a role for you, the geospatial data community. We're counting on you to provide global, regional and national framework data, to under-pin GEOSS. You can also support long-term continuity of operational US Earth observation capabilities to monitor the land, atmosphere and ocean. Finally, you can also support the U.S. and international initiative such as the Global Spatial Data Infrastructure, the National Spatial Data Infrastructure and the Global Map.

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Education, Technology Transfer, Outreach

Encourage development of university courses and research that develop skills in the integrated use of remote and in situ observation systems

Translation of technical data and products to tools that support decision-making related to societal needs by those who make these kinds of decisions

Improve interactions between the technical elements and other aspects of societally-relevant decisions: social, economic, political, cultural

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The GEOSS architecture (schematic)

Slide 22 - Websites

For information you can check out these web sites.

Closing comments:

For Geospatial Data to Go Global, which is the theme of this conference, we need the best data (historical and current), ready access to those data, and the best science. We must organize, cooperate and share. The USGS recognizes that and welcomes the challenges, which leads us all to this end.

I encourage you to talk to USGS representatives at this conference at the sessions and in the exhibit hall this week, and to keep the dialogue going in the coming months as we face global and local geospatial challenges. To meet the desired outcome of improved integration and data exchange, USGS will continue to partner with the private sector, government and international leaders in geospatial studies and data providers.

I invite you to attend the concurrent technical session number one “Implementing a 10-year Plan for Improved Global Earth Observations: US and International Progress” immediately following this session. You will have an opportunity to ask questions and learn more about these international and National efforts.